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ABSTRACT

Findings from a 607 page report, "Follow Through Classroom Observation Evaluation 1972-1973," are briefly summarized. The report is based upon systematic observation of Follow Through classrooms in action. Two key questions have been asked: (1) How well is each of seven instructional models carried out within the classroom? and (2) Are observed classroom practices related to desired child outcomes? It is reported that the great majority of first and third grade teachers included in the study are conforming to instructional procedures as specified by the sponsors. Time spent in reading and math activities and a high rate of drill, practice, and praise were shown to contribute to higher reading and math scores. Lower absence rates, higher scores on a nonverbal problem-solving test of reasoning can be attributed in part to more open and flexible instructional approaches. It is concluded that what occurs within a classroom does contribute to achievement in basic skills, good attendance, and desired child behaviors. Further, the seven Follow Through models considered in this study are bringing different strengths to their pupils, and each is bringing advantages not usually found in traditional classrooms. (RC)

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Executive Summary

October 1974

FOLLOW THROUGH CLASSROOM OBSERVATION EVALUATION 1972-1973

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Prepared for:

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EXECUTIVE SUMMARY

The Follow Through Program was established by Congress in 1967 when it became apparent that a program was needed in the early grades of public school to reinforce and extend the academic gains made by economically disadvantaged children enrolled in Head Start or similar preschool programs. An important question continually raised by government agencies and educators has been, "Does the Follow Through Program of Planned Variations succeed in training teachers to follow the intended experimental methods of instruction?" (That is, are a variety of educational programs being successfully implemented?) A second question asked is central to the primary objective of the Follow Through evaluation: "How are children affected by these different educational approaches?"

The present report is based upon systematic observations of Follow Through classrooms in action. Two key questions have been asked: (1) How well is each of seven instructional models carried out within the classroom? and (2) Are observed classroom practices related to desired child outcomes? The answers to these questions are not only basic to the overall evaluation of Follow Through but also of importance to future planning of other educational intervention programs.

The seven Follow Through programs selected for study in this analysis represent a wide spectrum of innovative educational theories. The range includes two models based upon the positive reinforcement theory (the University of Kansas and the University of Oregon), a model based primarily upon the cognitive developmental theory of Jean Piaget (High/Scope Foundation) an open classroom model based upon the English Infant School theory (Education Development Center) and three other models drawn from Piaget, John Dewey, and the English Infant Schools (Far West Laboratory, University of Arizona, and Bank Street College).

Evaluation Plan

The evaluation plan called for 20 first grade and 20 third grade classrooms selected from five projects for each of the seven sponsors. Since the Follow Through programs are intended to be innovative and to represent alternatives to the conventional classroom, a pool of Non-Follow Through classrooms was used as the standard from which Follow Through classrooms were expected to differ in specified ways. The distribution of sponsors' projects is representative as far as possible of all geographic regions, urban and rural, racial and ethnic groups.

Measurements

Implementation

The observation method used to assess implementation was developed by Stanford Research Institute and has been used in three previous studies of Follow Through classrooms. The method provides a systematic and reliable way to enumerate information regarding classroom procedures including materials used, activities which occur, and grouping and interaction patterns of adults and children.

Child Measures

The children's entering ability was assessed by the Wide Range Achievement Test (WRAT) which was administered to children when they entered school, either at the kindergarten or first-grade level.

Reading and math skills were assessed by the Metropolitan Achievement Test (MAT) in both first and third grades.

Problem-solving skills (perceptual) were assessed in third grade only using the Raven's Coloured Progressive Matrices (Raven's). This test, which was designed by John C. Raven (1956) as a culture-fair, fluid intelligence test, was adapted for use in the evaluation as a measure of nonverbal reasoning and problem-solving ability in visual perceptual tasks.

The Intellectual Achievement Responsibility Scale (IAR), used in the third grade only, assessed the extent to which the child takes responsibility for his own successes or failures or attributes his achievements to the operation of external forces (e.g., luck or fate).

Child behaviors were assessed through systematic observations recorded on the SRI Observation Instrument.

Absences from school were determined from school records.

Results of the Implementation Study

The classrooms of all seven Follow Through sponsors were found to be significantly different from the comparison classrooms. Further, the different classrooms of a given sponsor were observed to be remarkably similar to each other whether they were being implemented, for example, in Tuskegee, Alabama, or New York City. In most cases, on the basis of observation, classrooms could be correctly classified as to sponsor without prior knowledge of what model the teacher was attempting to put into practice.

Implementation of the models was not adversely affected in cities where a high percent of children use English as a second language; in fact, cities that had a higher percent of bilingual children--Salt Lake

City, Utah; Fall River, Massachusetts; Greeley and Denver, Colorado; Fort Worth, Texas; and Lakewood, New Jersey--had excellent success in implementing Follow Through programs.

Low average incomes did not seem to prevent successful implementation; e.g., Portageville, Missouri; Rosebud, Texas; Greenwood, Mississippi; and Smithfield, North Carolina all had high implementation scores although their average incomes were lower than the average for all locations in the study.

The size of the city may have had some effect on implementation. Seven of the eight less well implemented sites were in large cities. In general, small sites such as Smithfield, North Carolina; Greeley, Colorado; Portageville, Missouri; Tupelo, Mississippi; Tuskegee, Alabama; and Lebanon, New Hampshire were implemented more consistently at both grade levels and they had higher implementation scores in both grades than did other larger sites. This seems to indicate that the educational change represented by the Follow Through sponsors may be brought about more successfully in smaller cities and towns than in large inner-city schools. There are exceptions, of course; University of Kansas, a highly structured model which is very specific in its directions to teachers and aides, was successfully implemented in both grade levels in a large city (Philadelphia).

Overall, it is possible to conclude that with minor exceptions the seven Follow Through sponsored models considered in this study have been brought into being as planned.

The Relationship of Classroom Environments to Child Outcomes

The study of Follow Through sponsors would be of little importance if we did not believe that differing educational theories and practices have different impacts upon children. Therefore, a study was conducted to see how varying teaching practices relate to child development. Combining 108 Follow Through and Non-Follow Through first grade and 58 Follow Through and Non-Follow Through third grade classrooms for which entering test scores were available, a statistical analysis was conducted to find the relationship between observed teaching methods and (1) test scores, (2) absence rates, and (3) selected child behaviors.

Reading Achievement Results

The length of school day and the average time a child spends engaged in a reading activity are related to higher reading scores in both first grade and third grade. The length of the school day for the classrooms in the evaluation varies as much as two hours; accordingly, when the school day is longer the children have more opportunity to engage in reading. Higher reading scores are also found in classrooms where there is more reading or discussions of reading between adults and children. Thus, opportunity and exposure to reading have an important relationship to good performance on tests.

Higher reading scores were obtained in classrooms using systematic instructional patterns where the teacher provides information and asks a question about the information. The child responds and the teacher immediately lets the child know whether the response is right or wrong. If he is wrong, the child is guided to the correct answer. If he is correct, he receives praise, a token, or some form of acknowledgment. These preliminary findings suggest this type of positive reinforcement contributes to higher reading test scores in both first and third grades.

Small groups were most effective for teaching first grade reading, while large group instruction worked well in the third grade. In classrooms where children work by themselves and are task persistent (maintain their attention on their studies without teacher guidance), they also achieve higher reading scores. In classrooms where textbooks and programmed workbooks were used most often, the reading scores were higher. Also, in classes where a greater than average amount of time is spent on social studies, the reading scores are higher. Obviously, reading skills are used in social studies projects, but it is of interest to note that experience in social studies is related to reading scores.

It is noteworthy that the University of Oregon and the University of Kansas, both of which are models that use the classroom procedures described here, show greater gains in first grade reading than all other sponsors and greater gains than Non-Follow Through classes.

Math Achievement Results

As in reading, the length of school day and average time per child spent in math activities are related to higher math scores in both first and third grades. Thus, the opportunity a child had to engage in math, either in formal instruction or in less formal exploratory activities working with (or just "messing with") weights and measuring tools, contributed to higher scores in math. Also, in classrooms where adults and children more often discussed or talked about mathematical problems and concepts, the test scores in math were higher. The value (in terms of math scores at the end of the third grade) of spending large amounts of class time on math was especially marked for the children whose general ability was weak when they entered school.

The effect of praise on achievement in math in first grade was variable: in classrooms where children had relatively low entering ability, the children profited more from a high rate of praise than they did in classrooms where the students had higher entering ability. This type of information could be useful in planning educational programs to enhance the learning of children with differing abilities at different age levels.

As in reading, children had higher math scores in classrooms where teachers used systematic instructional patterns; that is, the teacher provides information and asks a question about the information. The child responds and the teacher immediately lets the child know whether the response is right or wrong. If he is wrong, the child is guided to the correct answer. If he is correct, he receives praise, a token, or some other form of acknowledgment. This positive reinforcement contributes to higher scores on math tests in both grade levels.

In classrooms where textbooks and programmed workbooks were used frequently, the test scores on math were especially good. In addition, the use of instructional materials such as programmed material, Cuisenaire rods, or Montessori materials contributed to higher math scores.

In first grade classrooms where children were taught in small groups, the math test scores were higher. In third grade, large group instruction contributed to higher scores. When children can work by themselves some of the time and can persist at a task, they are also more likely to have higher scores in math achievement.

University of Kansas, which uses the classroom procedures described here as contributing to high math scores, had higher scores in first grade math than all other sponsors and Non-Follow Through classes. University of Oregon, which also uses these instructional processes in their classrooms, had higher scores in the third grade math than all other sponsors and Non-Follow Through classes. These findings strongly suggest that classroom procedures used in University of Kansas and University of Oregon classrooms contribute to child achievement in reading and math.

Raven's Problem Solving Test Results

In general, high scores on Raven's Coloured Progressive Matrices (a test of nonverbal perceptual problem solving) tend to be earned by children in the more flexible classrooms where a wide variety of materials are used, many different activities occur, and children are allowed to select their own groups and seating part of the time. In these more flexible classrooms, children have more opportunities to manipulate materials and discover the relationships between items to see how things fit together. In these classrooms, adults more often interact with children on a one-to-one basis, more open-ended questions are asked, and children show more verbal initiative. Far West Laboratory, University of Arizona, Bank Street College, High/Scope Foundation, and Educational Development Center use these processes, and the classrooms in these models have higher scores on the Raven's.

Responsibility Scale Results

Children in the more "open" classrooms earn higher scores on the Intellectual Achievement Responsibility success scale. Our results indicate that children from the more flexible classrooms take responsibility

for their own success but not for their failure. Children from the more highly structured classrooms take responsibility for their own failure but attribute their success to their teacher's competence or other forces outside themselves. Only the classrooms of Educational Development Center had scores indicating that the children took responsibility for both their sucesses and failures.

Days Absent Results

The absence rate is important for several reasons; e.g., many school budgets are determined by the average daily attendance. Also, days absent can be used as an indicator of attitude toward school. It is well known to parents and teachers that if a child enjoys school, he may attend even if he does not feel very well. If he does not like school, he is more likely to stay home whenever he feels any discomfort.

Our findings suggest that in both first and third grade classrooms, children are absent less frequently in "open" classrooms--that is, in classrooms where there is a high rate of child independence, child questioning, adults responding, individualized instruction, and open-ended questioning. Also, in classrooms where children and adults smile and laugh more often, the children are absent less often.

Children were absent more frequently in both first and third grade classrooms where they worked in large groups more often and where adults used direct questions in academic work and frequent critical corrective feedback.

Findings for the third grade indicate that in classrooms where children were punished they also were absent more often. In addition, classrooms with a higher rate of negative, harsh, or demeaning statements on the part of teachers and students showed a higher absence rate.

A report of absence rate indicates that at the first grade level, children in classrooms of sponsors who used more highly structured environments, materials, and interactions also had a higher absence rate. Classrooms of three sponsors, Far West Laboratory, University of Arizona, and High/Scope Foundation, models which used a wide variety of activities and materials, had children who had lower absence rates than classrooms of other sponsors and Non-Follow Through classrooms. As might be expected, the absence rate for all sponsors and Non-Follow Through diminished from first grade to third grade.

Child Behaviors Results

Independence--In our study, independence is defined as a child or children engaged in a task without an adult. This type of independent behavior is more likely to be found in classrooms where teachers allow children to select their own seating and groups part of the time, where

a wide variety of activities is available, and where an assortment of audiovisual and exploratory materials is available. The adults provide individual attention and make friendly comments to the children.

Our investigations indicate that children in the classrooms of Educational Development Center and Far West Laboratory evidence more independence than do the children in Non-Follow Through and other sponsors' classrooms.

Task Persistence--For this study, task persistence is defined as a child engaged in self-instruction over a few minutes or more. The highest positive relationships indicate that task persistence occurs most often when textbooks and workbooks are used in the classroom. Where adults instruct one child at a time the children are also likely to be more task persistent. This may be because young children often have difficulty understanding group instructions. However, in settings where adults work on a one-to-one basis, children can have a question answered or directions clarified and then go ahead independently with the task at hand.

University of Arizona and University of Kansas have higher scores on task persistence than do other models and Non-Follow Through.

Cooperation--For this study, cooperation is defined as two or more children working together on a joint task. This kind of cooperation is more likely to be found in classrooms where a wide variety of activities occur throughout the day, where exploratory materials are available, and where children can choose their own groupings. If the adults interact with two children, asking questions and making comments about the task, the children seem to be encouraged to join each other in cooperative tasks.

The children in the Bank Street College, High/Scope Foundation, and Educational Development Center programs more often joined each other in a cooperative task than did children in other models and Non-Follow Through children.

Question Asking--Educators have long recognized the value of a child's asking questions as a primary means to gain information. Previous research indicates that question-asking is positively related to test scores.* In our study, we found that first grade children asked more questions where there was a one-to-one relationship of adult with child in classrooms, where adults responded to children's questions, and where adults made general conversational comments to children.

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*Stallings, Baker, and Steinmetz (1972) and Stallings (1973) report that children asking questions is related to higher scores on achievement tests and attitudinal tests.

Children in classrooms using Far West Laboratory, Bank Street College, University of Kansas, High/Scope Foundation, and Educational Development Center programs ask questions more often than do children in other models and Non-Follow Through children.

Child Outcome Scores Explained by Entering Ability* and Classroom Processes

Whether or not classroom procedures affect the growth and development of children has been seriously questioned by other research (Coleman, Jencks, Herrnstein, Moynihan, and Mosteller). Their research has indicated that a child's entering aptitude is of primary importance and, in fact, governs what the child will achieve in school. The study reported here, however, found that observed classroom procedures contributed as much to the explanation of test score differences as did the initial ability of children.

The achievement of a child in math at the end of first grade can be attributed in part to his ability as it was measured when he entered school but even more so by the instructional practices used by his teachers. In first grade entering ability accounts for approximately one third of the children's achievement in math, while instructional procedures used in the classroom account for approximately 40 percent of the achievement. By the third grade, less of the achievement can be attributed to entering school ability and more to classroom practices.

Approximately one half of first grade reading achievement can be attributed to the entering ability of the children. The instructional procedures used by teachers account for approximately one fourth of the reading achievement. In third grade reading success can be attributed about equally to the instructional procedures used by teachers and the entering ability of the children.

One of the most important findings centers around the Raven's test of nonverbal reasoning or perceptive problem solving (considered to be a culture-fair test of fluid intelligence). The abilities required to function well on this test have not been considered to be influenced by environment. This study found that ability to perform well on this test was influenced by the classroom environment and strongly suggests that children who, for a period of three years, have been in classrooms that use a wide variety of activities and provide a wide variety of manupulative materials have learned to see the relationship between parts and wholes. At any rate, they learn to see spatial relationships similar to those tested on the Raven's.

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*Entering ability was measured by the Wide Range Achievement Test administered when the child entered school.

Very little of the absence rate was explained by entering ability, while about 60 percent was explained by the instructional procedures used in the classroom, indicating that what occurs in classrooms is highly related to whether or not the child stays away from school.

Child behavioral outcomes were only slightly explained by entering aptitude. As might be expected, these behaviors were much more related to classroom processes.

Collectively, these results provide compelling evidence that what occurs in classrooms does contribute to child growth and development.

Conclusions

Two issues of educational importance have been addressed in this study: (1) Have a variety of innovational educational programs (Planned Variation) been successfully put in place in diverse sites across the country? (2) If these educational models have been installed, how have they affected the growth and development of children?

The study reports that the great majority of first and third grade teachers included in this study are conforming to instructional procedures as specified by the sponsors. Based upon this finding we conclude that the seven sponsors' models are being implemented in the sites included in this sample.

A study of the instructional procedures used in classrooms and the achievement of children indicates that time spent in reading and math activities and a high rate of drill, practice, and praise contribute to higher reading and math scores. Children taught by these methods tend to accept responsibility for their failures but not for their successes. Lower absence rates, higher scores on a nonverbal problem-solving test of reasoning can be attributed in part to more open and flexible instructional approaches in which children are provided a wide variety of activities and materials and where children engage independently in activities and select their own groups part of the time.

Based upon these findings, we conclude that what occurs within a classroom does contribute to achievement in basic skills, good attendance, and desired child behaviors. Further, the seven Follow Through models considered in this study are bringing different strengths to their pupils, and each is bringing advantages not usually found in traditional classrooms.

MAJOR FINDINGS*

- Seven sponsors' educational models were studied in five locations each. Each model had unique features that were consistently present in all five of a sponsor's sites. The seven sponsors' models are considered to be well implemented, and could be expected to be implemented in other locations similar to those in the study.

- Classroom instructional practices in first and third grade classrooms have been identified which contribute to higher test scores, other desired child behavior, and lower absence rates.

- Highly controlled classroom environments in which teachers used systematic instruction and a high rate of positive reinforcement contributed to higher scores in math and reading. Flexible classroom environments which provide more exploratory materials and allow for more choice on the part of the child contributed to higher scores on a test of nonverbal reasoning, lower absence rates, and a willingness on the part of children to work independently.

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*These findings are supported by statistical analysis in Follow Through Classroom Observation Evaluation 1972-1973, Stallings and Kaskowitz, Stanford Research Institute, Menlo Park, August 1974.